

A NEW SPECIES OF TREE DWELLING *Peucetia* THORELL, 1869 FROM MUMBAI, INDIA. (ARANEAE: OXYOPIDAE)

Javed Ahmed, Y. Satam*, R. Khalap** and K. Mohan***

Panchavati Housing Society, Building No. A/3, Flat No. H/8, Opp. Police Camp,
Vijay Nagar, Marol Maroshi Road, Andheri (East) Mumbai 400059.

curiocritters@gmail.com

*A/3-25, Police Camp, Marol Maroshi Road, Andheri (East), Mumbai 400059.

nannusatam@gmail.com

**5 - A, Sagar Sangeet, 58 Shahid Bhagat Singh Marg, Colaba, Mumbai 400005.

rajashree.khalap@gmail.com

***Prabhu Hospital, Hospital Cross Road, Moodubidire 574227, India.

drkrishi@gmail.com

ABSTRACT

A new species of lynx spider *Peucetia phantasma* sp. nov. shown to exclusively inhabit the ghost tree, *Sterculia urens* Roxb. is described from Aarey Milk Colony, Mumbai, Maharashtra.

Key Words: Oxyopidae, *Peucetia*, India, Maharashtra, Mumbai, nouveau taxon, Aarey Milk Colony, Natural History.

INTRODUCTION

The Lynx spiders or Oxyopidae Thorell, 1870 constitute a family of largely free-living, ambush hunting plant dwellers, some of which spin webs and display social behavior or have a propensity for stalking the forest canopy or the leaf litter (Dhali *et al.*, 2015; Deelman-Reinhold, 2009; Jocqué & Dippenaar-Schoeman, 2007; Aviles, 1994; Griswold, 1983).

Amongst these, the genus *Peucetia* Thorell, 1869 consists of relatively large, widely distributed species characterized by the following traits: chelicerae devoid of teeth, eyes arranged hexagonally, anterior row of eyes strongly recurved, distinctly wider than the posterior row, which is only slightly procurved (Santos & Brescovit, 2003; Van Niekerk & Dippenaar-Schoeman, 1994). Represented by 46 species, globally, 20 species are hitherto known to occur in India (World Spider Catalog, 2015; Keswani *et al.* 2012).

The afrotropical members of this genus were placed into various non-hierarchical species groups, based primarily on male and female genital characteristics, with no phylogenetic content, but rather, phenetic constructs to aid in identification (Van Niekerk & Dippenaar-Schoeman, 1994).

The present report describes a new species of tree dwelling *Peucetia*, from Aarey Milk Colony, in Maharashtra, Mumbai, known to exclusively inhabit the ghost tree, *Sterculia urens* Roxb.

It has been tentatively placed in the *P. striata* Karsch, 1878 species group, pending a suprageneric revision of the family in India.

MATERIALS AND METHODS

Living spiders were visually detected during nocturnal surveys conducted to document the Araneae of Aarey Milk Colony, Mumbai, a 4000 acres eclectic mix of highly varied ecosystems, predominated by cultivated grassland, and interspersed with wooded scrub and shrubland, photographed using a Canon EOS 550D, with an 18-55 mm lens (reversed for macro shots of martyred specimens), hand collected, euthanized and preserved in 80% ethanol.

Female genitalia and male palpus were excised, cleared using clove oil and examined with a stereo zoom microscope. Measurements recorded are in mm and were taken using a dial caliper, with the leg measurements provided as follows: Total (femur, patella, tibia, metatarsus, tarsus).

Terminology used follows Van Niekerk and Dippenaar-Schoeman, 1994. All materials examined will be deposited in the repository of the Bombay Natural History Society, Mumbai.

Taxonomy

Peucetia Thorell, 1869

Peucetia phantasma sp. nov.

(Figures 1-10)

Type specimens:

Holotype: Female, Aarey Milk Colony, Mumbai, Maharashtra, 23.vi.2015, 19.1485° N, 72.8818° E, Javed Ahmed and Yogendra Satam.

Allotype: Male, 13.iv.2015, data same as holotype, Javed Ahmed and Yogendra Satam.

Paratype: Female, 13.iv. 2015, data same as holotype and allotype, Javed Ahmed and Yogendra Satam.

Etymology:

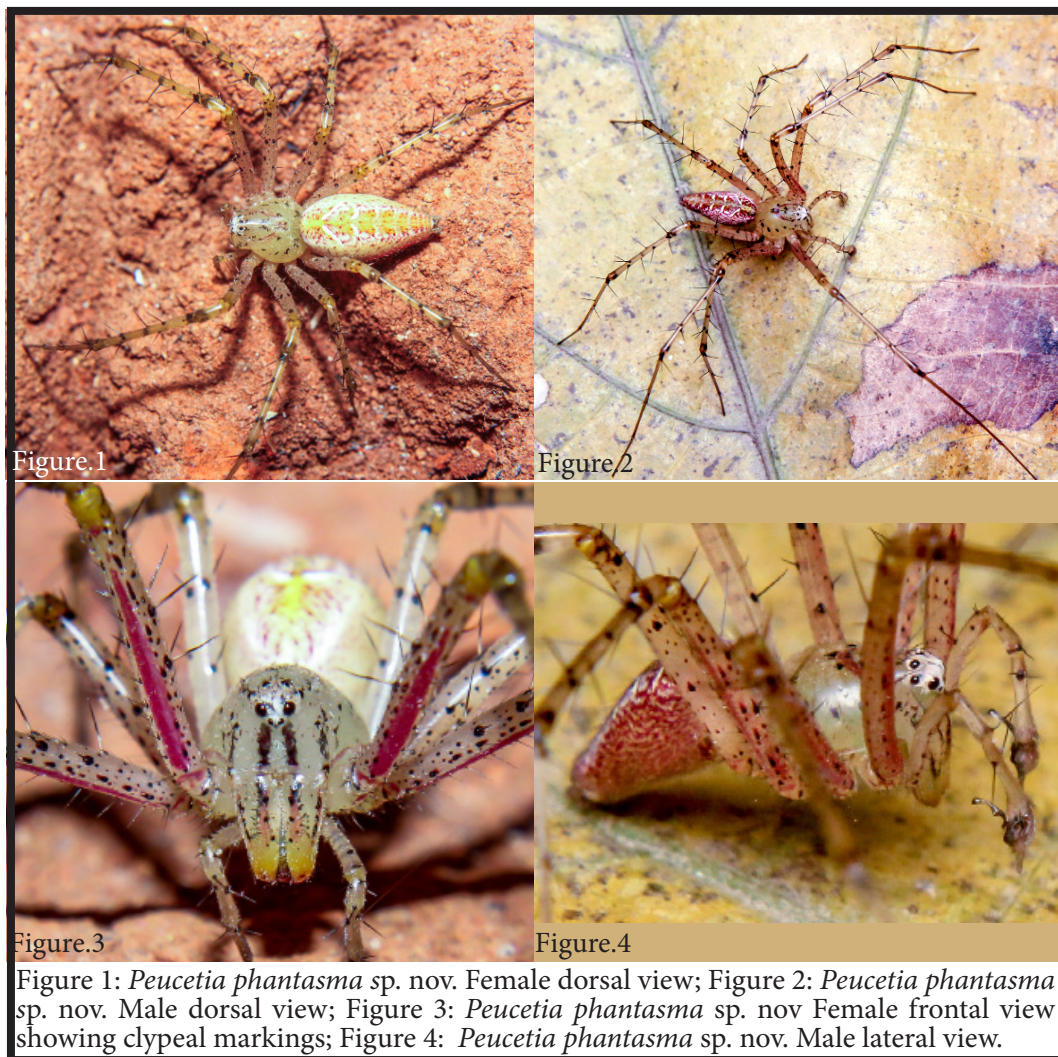
The specific name is derived from an alternate Latin word for ghost, 'phantasma', referring to the popular name of the species' preferred host plant, *S. urens* (Figure 6).

Diagnosis:

Epigyne: Pit deep, rounded anteriorly, costae large, round, thick walled, with medial bulbous structures, extending posteriad into ventrolaterally arching, bidentate black horns. Spermathecae ovoid, connected to rest of the internal genitalia organs by short, thin, curved fertilization ducts, and possessing short, twisted, funnel-like copulatory ducts which lead to posterolaterally directed copulatory openings (Figures 7-8).

Palp: Tibia longer than tarsus, with rows of setae on the distal end, tibial spines equal in length, similar in form and structure, and directly opposed to each other. Cymbium elongate, digitiform. Embolus twisted. Conductor narrowed anteriorly, highly arched over tegulum. Retrolateral median apophysis long, with a single protuberance situated anteriorly, one-third from proximal end of spoon shaped distal tip (Figure 9).

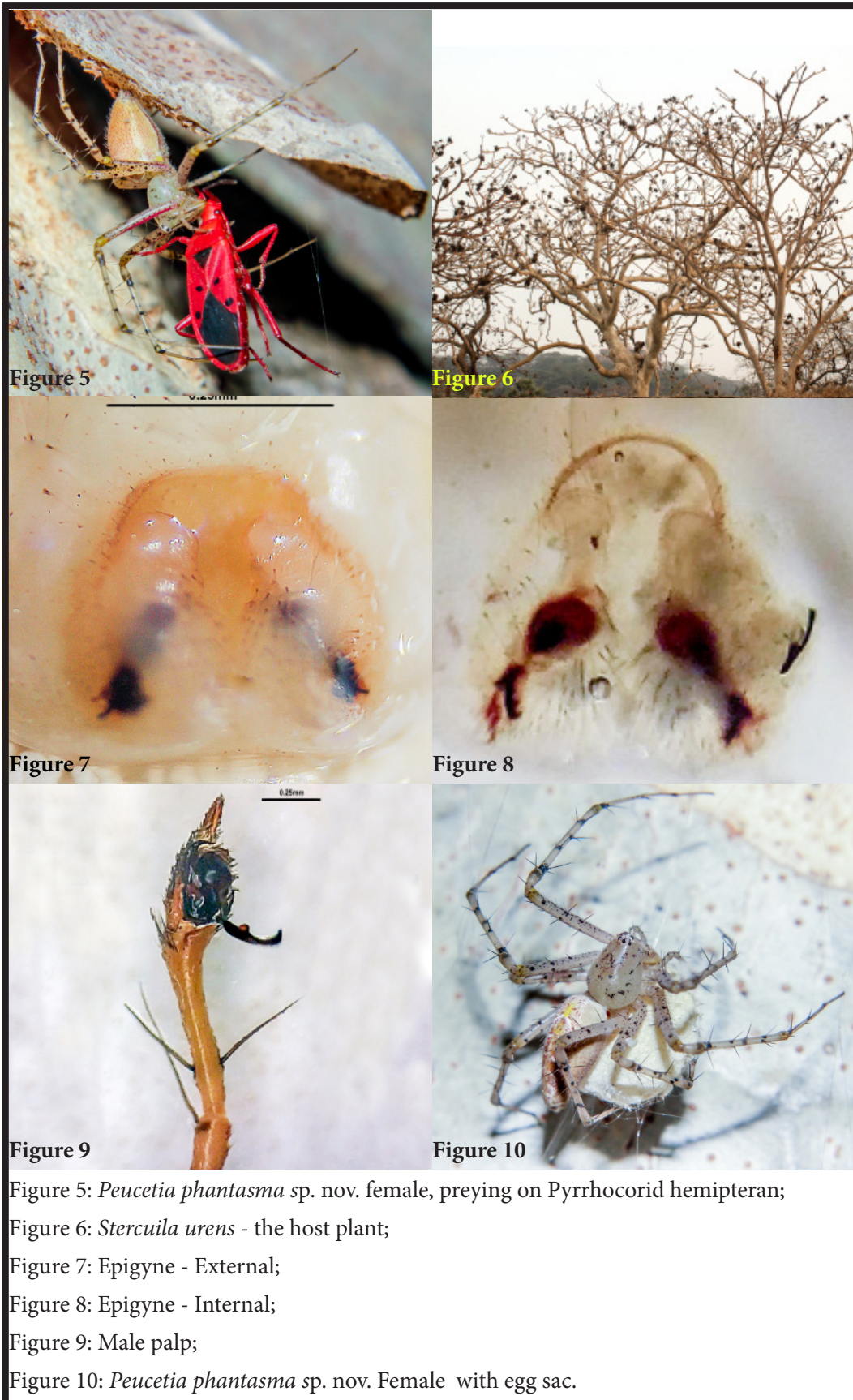
Most closely resembles *P. yogeshi* Gajbe, 1999, from which it differs in the following key characteristics, namely; epigynum with pit rounded anteriorly, possessing large, round, thick-walled costae, bearing bidentate ventrolateral horns, as opposed to an anteriorly pointed, triangular shaped pit and costae with heads indistinct, possessing a single horn,



ventrolaterally. External genitalia also lacks the distinct dark, curved bands present in *P. yogeshi*. Clypeus with four wavy lines, extending to nearly two-third the length of the chelicerae, instead of two clypeal lines, which marginally extend over to the proximal part of the chelicerae. Fovea shallow, instead of sharply defined, without the radiating brown lines which extend to the sides of the cephalic region, as in *P. yogeshi*. Carapace with a brown, parabolic impression, bordered by a series of black markings; a second series of black marks dotting the edges. Eyes not circled by black patches, as in *P. yogeshi* (Bastawade, 2008; Gajbe, 2008).

Palp of male resembles that of *P. maculifera* Pocock, 1900, but differs in the conductor narrowing anteriorly, highly arched over tegulum, as opposed to being broad with a narrow tip, acutely bent near the base, with the apex touching the tegulum (Van Niekerk & Dippenaar-Schoeman, 1994).

Epigynum and palp also resemble those of *P. striata* Karsch, 1878, but differ in the shape of the spermathecae being ovoid, instead of oblong, located posteriad to the costae, as opposed to anteriorly; epigynal horns black and bidentate, instead of being reddish brown and variable in length and shape. Male palp with apex of conductor narrowed anteriorly, highly arched, instead of bulbous, with a narrow tip directed anteriorly (Van Niekerk & Dippenaar-Schoeman, 1994).



Description:

Female Holotype: Prosoma 6.11 long, 5.35 wide; Opisthosoma 10.60 long, 5.71 wide.

Leg measurements: I **32.49** (8.92, 2.86, 8.64, 7.59, 4.48), II **28.27** (8.58, 2.52, 7.81, 6.29, 3.07), III **22.07** (7.02, 2.11, 5.44, 5.08, 2.42), IV **24.83** (7.92, 1.93, 6.77, 5.41, 2.80).

Male Allotype: Prosoma 4.94 long, 3.98 wide; Opisthosoma 6.86 long, 3.79 wide.

Leg measurements: I **31.58** (7.81, 2.27, 7.92, 8.71, 4.87), II **26.87** (7.41, 2.51, 6.71, 7.07, 3.17), III **20.71** (5.63, 2.29, 5.11, 5.57, 2.11), IV **23.4** (6.30, 2.59, 5.91, 6.27, 2.33).

Female Paratype: Prosoma 6.10 long, 4.58 wide; Opisthosoma 8.68 long, 5.73 wide.

Leg measurements: I **29.3** (8.51, 2.25, 7.52, 6.98, 4.04), II **25.4** (7.88, 1.95, 6.56, 6.19, 2.82), III **20.65** (6.48, 2.31, 4.40, 4.98, 2.48), IV **22.21** (7.13, 1.93, 5.35, 5.71, 2.09).

Prosoma longer than wide, high and convex anteriorly, sloping posteriad, narrowing frontally, wide posteriorly, with rounded sides. Ocular area with white, appressed microsetae. Carapace pale green, with a shallow fovea; a brown parabolic impression, lighter in females, darker in males, bordered by a series of black marks; a second series of black markings dotting the edges. Clypeus with four wavy, dark brown lines; extending onto and covering nearly 2/3rd the length of basally yellow chelicerae. Median lines distally pink.

Opisthosoma elongate, narrow posteriorly, light green in female with bright yellowish-green median band, bearing white chevron markings, thinly bordered with pink. Venter with a broad, green mediolongitudinal area, widening towards the epigynum and bordering it, tapering posteriorly, bordered by brown and white lines, with the brown lines fading after preservation. Male smaller, darker in overall coloration, opisthosoma bearing dark green median band, with white chevron markings, and a series of short white striations, laterally.

Legs long, slender and spotted, possessing numerous spines. Femur of first three pair of legs with a deep shade of magenta ventrally, only marginally present on the underside of the fourth, distally ringed with yellow dorsally, which extends to the patella, proximally. Patella with a broad, brown dorsal mark, distally. Proximal part of tibia ringed with black; brown and yellow distally. Metatarsus broadly ringed proximally with black. Tarsus light colored.

Distribution:

Presently known only from Aarey Milk Colony, in the type locality, Mumbai. Presumably more widespread in the region and perhaps the state.

Natural History:

A large, colorful oxyopid, presently known to exclusively inhabit the ghost tree, *S. urens* (Figure 6), with female spiders preferring to occupy the bole and branches, sometimes in close proximity to large pieces of loose bark, at heights ranging from 6 to 20 feet from ground level. Males were usually found on flower clusters located terminally to the branches, during summer, and under leaf clusters, in the monsoons.

Pyrhocorid Hemiptera inhabiting the trees were notably fed upon by female spiders (Figure 5), which were also observed carrying a subspherical egg sac, held underneath the body and secured using the third and fourth pair of legs, in the months of April and June (Figure 10).

Remarks:

While the affinity of certain members of the genus for host plant specificity, especially those bearing glandular trichomes is a well known phenomenon globally (Turner, 1979; Arango *et al.*, 2000; Vasconcellos-Neto *et al.*, 2007; Jiménez-Salinas & Corcuera, 2008; Arango *et al.*, 2012), the fact has been either overlooked or unobserved in the country, with the present report being the first of its kind, from India.

ACKNOWLEDGEMENTS

The authors would like to express their heartfelt gratitude for the works of Mr. Reginald Innes Pocock and Dr. B. K. Tikader; pioneers of Indian Arachnology, whose respective works on the subject remain indispensable as unmatched classics.

Dr. B. F. Chhapgar, marine biologist emeritus, Mr. Kiran Khalap, author and rock climber extraordinaire and Mr. Sunjoy Monga, honorary wildlife warden, Mumbai; exceptional naturalist and ornithologist par excellence, took a keen interest in our natural history observations and discoveries, and their kind help and unfailing support over the years is deeply appreciated.

Nicky Bay, avid naturalist and outstanding macro photographer, and John Caleb, prodigious arachnologist, are thanked for the many wonderful discussions held on the subject.

Mr. Rahul Khot, entomologist and curator, and Mr. Vinod Patil, research assistant, Bombay Natural History Society, Mumbai, are acknowledged for their kind assistance.

REFERENCES

- Aviles, L. 1994. Social behavior in a web-building lynx spider, *Tapinillus* sp. (Araneae: Oxyopidae). *Biological Journal of the Linnean Society*, 51: 163-176.
- Arango, A. M., V. Rico-Gray and V. Parra-Tabla. 2000. Population structure, seasonality and habitat use by the green lynx spider *Peucetia viridans* (Oxyopidae) inhabiting *Cnidoscolus aconitifolius* (Euphorbiaceae). *Journal of Arachnology*, 28:185-194.
- Arango, M. A., J. Lopez-Portillo, V. Parra-Tabla, T. L. Hernandez-Salazar, E. J. Morales-Mavil and V. Rico-Gray. 2012. Effect of the spider *Peucetia viridans* (Oxyopidae) on floral visitors and seed set of *Cnidoscolus multilobus* (Euphorbiaceae). *Acta Botanica Mexicana*, 100: 1-14 (2012).
- Bastawade, D.B. 2008. Arachnida: Scorpionida, Araneae and Opiliones. In: Director, Zoological Survey of India (Ed.), Fauna of Lonar Wildlife Sanctuary. *Zoological Survey of India, Kolkata*, pp. 133-153.
- Deeleman-Reinhold, C. L. 2009. Description of the lynx spiders of a canopy fogging project in northern Borneo (Araneae: Oxyopidae), with description of a new genus and six new species of *Hamataliwa*. *Zoologische Mededelingen*, 83: 673-700.
- Dhali, D. C., S. Saha and D. Raychaudhuri. 2015. A new litter dwelling *Oxyopes* Latreille (Araneae: Oxyopidae) species from Jalapara Wild Life Sanctuary, India. *Species* 12(32): 24-29.
- Griswold C. 1983. *Tapinillus longipes* (Taczanowski), a web-building lynx spider from the
- July 2015, *Indian Journal of Arachnology*, 4(1).....054

- American tropics (Araneae: Oxyopidae). *Journal of Natural History*, 17: 979-985.
- Gajbe, U. A. 1999. Studies on some spiders of the family Oxyopidae (Araneae: Arachnida) from India. *Records of the Zoological Survey of India*, 97(3): 31-79.
- Gajbe P. 2003. Checklist of Spiders of Madhya Pradesh and Chhattisgarh. *Zoos' Print Journal*, 18(10): 1223-1226.
- Gajbe U. A. 2008. Fauna of India and adjacent countries: Spider (Arachnida: Araneae: Oxyopidae). *Zoological Survey of India*, 1-117.
- Jocque, R. and A. S. Dippenaar-Schoeman. 2006. Spider Families of the World. *Royal Museum for Central Africa*. pp
- Jiménez-Salinas, E., and P. Corcuera. 2008. Inflorescences and plant selection by the green lynx spider *Peucetia viridans* (Hentz) in a dry forest of western Mexico. *Rev. Iber. Aracnol.*, 15: 63-66.
- Karsch, F. 1878. Über einige von Herrn JM Hildebrandt im Zanzibargebiete erbeutete Arachniden. *Zeitschrift für die Gesamten Naturwissenschaften*, 51: 311-322.
- Keswani S., P. Hadole and A. Rajoria. 2012. Checklist of Spiders (Arachnida: Araneae) from India. *Indian Journal of Arachnology*, 1 (1): 1-129.
- Pocock, R. I. 1900. Some new Arachnida from Cape Colony. *Annals and Magazine of Natural History*, (7) 6: 316-333.
- Santos J. A. and A. D. Brescovit. 2003. A revision of the Neotropical species of the Lynx spider genus *Peucetia* Thorell 1869 (Araneae: Oxyopidae). *Insect Syst. Evol.* 34: 95-116.
- Thorell, T. 1869. On European spiders. Part I. Review of the European genera of spiders, preceded by some observations on zoological nomenclature. *Nova Acta Regiae Societatis Scientiarum Upsaliensis*, (3) 7: 1-108.
- Thorell, T. 1870. On European spiders. *Nova Acta Regiae Societatis Scientiarum Upsaliensis* (3) 7: 109-242.
- Turner, M. 1979. Diet and feeding phenology of the green lynx spider, *Peucetia viridans* (Araneae: Oxyopidae). *Journal of Arachnology*, 7:149-154.
- Van Niekerk, P. and A. S. Dippenaar-Schoeman. 1994. A revision of the Afrotropical species of *Peucetia* (Araneae: Oxyopidae). *Entomology Memoir, Department of Agriculture Republic of South Africa*, 89: 1-50.
- Vasconcellos-Neto, J., G. Q. Romero, A. J. Santos, and A. S. Dippenaar-Schoeman. 2007. Associations of spiders of the genus *Peucetia* (Oxyopidae) with plants bearing glandular hairs. *Biotropica*, 39:221-226.
- World Spider Catalog. 2015. World Spider Catalog. Natural History Museum Bern, online at <http://wsc.nmbe.ch>, version 16, accessed on 8/7/2015.